भारतीय मानक

Indian Standard

IS 9584 : 2022

चीज़ पाउडर — विशिष्टि

(पहला पुनरीक्षण)

Cheese Powder — Specification

(First Revision)

ICS 65.100.10

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December 2022 **Price Group 6**

Dairy Products and Equipment Sectional Committee, FAD 19

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Dairy Products and Equipment Sectional Committee had been approved by the Food and Agriculture Division Council.

Cheese powder is intended either to be reconstituted with milk or water to prepare a sauce, or used as-is as an ingredient (e.g. with cooked macaroni, milk and butter to prepare a macaroni and cheese casserole).

Considering the increasing usage of cheese powder in the country, this standard was originally published in 1980 to help in proper quality control and production of the product. This revision has been brought out to align the microbiological requirements of cheese powder with the *Food Safety and Standards (Food Products Standards and Food Additives) Regulations*, 2011. Reference has been given to FSSAI for the use of permitted food additives.

In the formulation of this standard, due consideration has been given to the provisions of the *Food Safety and Standards Act*, 2006 and the *Rules* and *Regulations* framed thereunder and the *Legal Metrology (Packaged Commodities) Rules*, 2011. However, this standard is subject to the restrictions imposed under these, wherever applicable.

The composition of the Committee responsible for formulation of the standard is given in Annex D.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

CHEESE POWDER — SPECIFICATION

(First Revision)

1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for cheese powder.

2 REFERENCES

The standards listed in Annex A, contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards.

3 TERMINOLOGY

For the purpose of this standard, the following definition shall apply.

3.1 Cheese Powder

It is a product obtained by drying the cheese or cheese slurry with or without the addition of permitted emulsifier, stabilizers, salt, colour, preservatives, acidifiers, coagulating agents, spices and natural flavours, etc.

4 REQUIREMENTS

4.1 Description

Cheese powder shall be white or white with greenish tinge or light cream in colour. It shall be free from lumps except those that break-up readily under slight pressure and shall be reasonably free from scorched particles. It shall not contain any ingredient not found in milk except those permitted under **3.1**. All ingredients used shall be clean and in every way fit for human consumption. It shall also be free from dirt and other extraneous matter. The quantities of additives in the cheese or cheese slurry should not exceed the quantities permitted under **4.3** of IS 2785 for processed cheese.

4.2 Flavour

Cheese powder shall have a pleasant and characteristic flavour.

4.3 The salt used shall be iodized salt conforming to IS 7224.

4.4 The product may contain permitted food additives within the limits as specified under the *Food Safety and Standards (Food Products Standards and Food Additives) Regulations*, 2011.

4.5 The product shall be processed and packed in the premises maintained under hygienic condition (*see* IS 2491). It shall also be stored and distributed under hygienic conditions.

4.6 The product shall also conform to the requirements given in Table 1 and Table 2.

Table 1 Requirements for Cheese Powder

(*Clause* 4.6)

Sl No.	Characteristic	Requirement	Method of Test, Ref to
(1)	(2)	(3)	(4)
i)	Milk fat (on dry basis), percent by mass, *Min*	40.0	IS 11721
ii)	Moisture, percent by mass, *Max*	5.0	IS 11623 for reference purpose and IS 16072 for routine purpose
iii)	Salt (added sodium chloride), percent by mass, *Max*	5.5	Annex B

Table 2 Microbiological Requirements for Cheese Powder
(*Clause* 4.6)

Sl No.	**Characteristic**	**Requirement**				**Method of test, Ref to**
		Sampling Plan		**Limit (cfu)**		
		n	*c*	*m*	*M*	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	Aerobic plate count	5	2	3×10^4 /g	5×10^4 /g	IS 5402 (Part 1)
ii)	Coliform count	5	2	< 10 /g	10 /g	IS 5401 (Part 1)
iii)	*Staphylococcus aureus* (Coagulase positive)	5	0	10 /g	1×10^2 /g	IS 5887 (Part 8/ Sec 1* or Sec 2)
iv)	Yeast and mould count	5	0	50 /g	–	IS 16069 Part 2
v)	*Salmonella spp.*	5	0	Absent/25 g	–	IS 5887 (Part 3/ Sec 1)
vi)	*Listeria monocytogenes*	5	0	Absent/g	–	IS 14988 (Part 1)
vii)	*Bacillus cereus*	5	3	5×10^2 /g	1×10^3 /g	IS 5887 (Part 6)
viii)	*Sulphite reducing clostridia*	5	3	50 /g	1×10^2 /g	ISO 15213
ix)	*E. coli*	5	0	Absent/g	–	IS 5887 (Part 1) or IS 16424*

NOTES
1 For sampling plan, (*see* Annex C).
2 In case of dispute, the method indicated by '*' shall be the referee method.
3 The requirement for *Salmonella* shall be tested in a laboratory situated away from the production area.

5 PACKING AND MARKING

5.1 Packing

The material shall be packed in nitrogen or mixture of nitrogen and carbon dioxide in hermetically sealed, cleaned, sound tin containers, in such a way as to protect it from deterioration.

5.2 Marking

5.2.1 The following information shall be marked legibly and indelibly on each container:

a) Name of the material also mentioning type of cheese and brand name if any;

b) List of the ingredients in the descending order;

c) Name and address of the manufacturer;

d) Batch or code number;

e) Month and year of manufacturing or packing;

f) Net quantity;

g) Direction for storage;

h) Expiry/use by (date, month & year); and

j) Any other requirements under the *Food Safety and Standards (Labelling and Display) Regulations*, 2020 and the *Legal Metrology Act*, 2009 and Rules framed thereunder.

5.2.2 *BIS Certification Marking*

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

6 SAMPLING

The method for drawing representative samples of the material and the criteria for conformity shall be as prescribed in Annex C of IS 1165.

ANNEX A

(*Clause* 2)

LIST OF REFERRED STANDARDS

IS No.	*Title*
IS 1165 : 2022	Whole milk powder – Specification (*sixth revision*)
IS 2491 : 2013	Food hygiene – General principles – Code of practice (*third revision*)
IS 2785 : 2022	Cheese – Specification (*second revision*)
IS 5401 (Part 1) : 2012/ISO 4832 : 2006	Microbiology of food and animal feeding stuffs – Horizontal method for the detection and enumeration of coliforms: Part 1 Colony count technique (*second revision*)
IS 5402 (Part 1) : 2021/ISO 4833-1: 2013	Microbiology of the food chain – Horizontal method for the enumeration of microorganisms: Part 1 Colony count at 30 °C by pour plate technique (*third revision*)
IS 5887	Methods for detection of bacteria responsible for food poisoning
(Part 1) : 1976	Isolation, identification and enumeration of *Escherichia coli* (*first revision*)
(Part 3/Sec 1) : 2020/ISO 6579-1 : 2017	Horizontal method for the detection, enumeration and serotyping of *Salmonella*, Section 1 Detection of *Salmonella* spp. (*third revision*)
(Part 6) : 2012/ ISO 7932 : 2004	Horizontal method for the enumeration of presumptive *Bacillus cereus*: Part 6 Colony - Count technique at 30 °C (*first revision*)
(Part 8/Sec 1) : 2002/ISO 6888-1: 1999	Horizontal method for enumeration of coagulase-positive Staphylococci (*Staphylococcus aureus* and other species), Section 1 Technique using Baird-Parker agar medium
(Part 8/Sec 2) : 2002/ISO 6888-2 : 1999	Horizontal method for enumeration of coagulase – positive (*Staphylococcus aureus* and Other Species), Section 2 Technique using rabbit plasma fibrinogen agar medium
IS 7224 : 2006	Iodized salt, vacuum evaporated iodized salt and refined iodized salt - Specification (*second revision*)
IS 11623 : 2008 / ISO 5537 : 2004	Dried milk – Determination of moisture content (Reference method) (*first revision*)
IS 11721 : 2013 / ISO 1736 : 2008	Dried milk and dried milk products – Determination of fat content - Gravimetric method (Reference method) (*second revision*)
IS 14988 (Part 1) : 2020/ISO 11290-1 : 2017	Microbiology of the food chain — Horizontal method for detection and enumeration of *Listeria monocytogenes* and of *Listeria* spp.: Part 1 Detection method (*first revision*)
IS 16069 (Part 2) : 2013/ISO 21527-2 : 2008	Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of yeasts and moulds: Part 2 Colony count technique in products with water activity less than or equal to 0.95
IS 16072 : 2012	Determination of moisture content in milk powder and similar products – Routine Method
16424 : 2016/ ISO 7251 : 2005	Microbiology of food and animal feeding stuffs – Horizontal method for the detection and enumeration of presumptive *Escherichia coli*– Most probable number technique
ISO 15213 : 2003	Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of sulfite-reducing bacteria growing under anaerobic conditions

ANNEX B

[Table 1, Item (iii)]

DETERMINATION OF SALT

B-1 REAGENTS

B-1.1 Concentrated Nitric Acid — Specific gravity 1.42 and Chloride free.

B-1.2 Iron Alum Solution — Cold saturated solution in 10 percent nitric acid.

B-1.3 Potassium Chromate Solution — 5 percent in water.

B-1.4 Standard Silver Nitrate Solution

Prepare a 0.05 N solution by dissolving 8.5 g of solid silver nitrate in one litre of distilled water. Standardize the silver nitrate solution against a solution of sodium chloride of known strength by Volhard method in the following manner.

B-1.4.1 *Preparation of 0.05* N *Sodium Chloride*

Place on a watch-glass about 5 g of sodium chloride and dry in an oven at 250 °C to 350 °C for 1-2 hours. Cool in a desiccator. Weigh in a tared weighing bottle 2.922 7 g of the dried salt. Transfer the salt without loss to a small beaker. Dissolve the salt in distilled water, washing into the beaker any fragments remaining in the weighing bottle. Transfer the solution to a one litre measuring flask, washing the beaker repeatedly with distilled water and adding the washings to the content of the flask. Finally, make up to the mark with distilled water. Mix well. The solution is then exactly 0.05 N.

B-1.4.2 *Standardization of Silver Nitrate Solution*

Pour the silver nitrate solution into a burette and pipette out 25 ml of the 0.05 N sodium chloride into the Erlenmeyer flask. Add 1 ml of potassium chromate solution, place the flask on a white tile, add the silver nitrate solution in a steady slow stream, rotating flask continuously. The red colour of silver chromate rapidly disappears at first, but as the concentration of sodium chloride is progressively weakened, the red colour will become more persistent until the addition of one drop of the silver nitrate causes the turbid yellow liquid to move towards a reddish colour, which persists after briskly shaking the flask. Repeat the titration until concordant results are obtained. Deduct from this value the amount of silver nitrate required to produce the similar change of colour in a mixture of 50 ml of distilled water, 1 ml of indicator and about 0.25 g of pure calcium carbonate to produce approximately the same degree of turbidity.

B-1.4.3 Suppose 25 ml of 0.05 N sodium chloride solution is required for 24.8 ml of the silver nitrate solution, then every 24.8 ml of the silver nitrate solution would need dilution with water to 25 ml. If 900 ml of the solution remains, they should be diluted to 907.2 ml. Add the required quantity of water and mix thoroughly. Repeat the titration with the diluted solution, which should now require 25 ml for 25 ml of the salt solution. Store the solution in an amber-coloured bottle.

B-1.5 Standard Potassium Thiocyanate Solution

Prepare approximately 0.05 N solution by dissolving about 55 g of potassium thiocyanate in one litre of the solution. Place the thiocyanate solution in a burette and pipette 25 ml of the silver nitrate into an Erlenmeyer flask. Add about 5 ml of nitric acid solution (one volume of pure acid diluted with 2 volumes of distilled water), followed by 1 ml of the iron alum indicator. Add the thiocyanate solution with constant brisk rotation of the flask until the reddish-brown colour of ferric thiocyanate becomes more persistent. Proceed more slowly, adding the thiocyanate drop by drop until one drop produces a faint brown colour which persists on shaking the flask. Repeat the titration until concordant results are obtained. If 25 ml of silver nitrate solution require less than 25 ml of the thiocyanate solution, it is then diluted with the calculated quantity of water as in the case of standardization of silver nitrate solution. Check the solution after dilution to make sure that it is exactly equivalent to the 0.05 N silver nitrate.

B-2 PROCEDURE

B-2.1 Weigh about two grams of the sample of cheese powder to an accuracy of 1 mg, in a 300 ml Erlenmeyer flask. Add 10 ml of distilled water and 25 ml of 0.05 N standard silver nitrate solution. Warm the contents of the flask at 75 °C to 80 °C to facilitate the dispersion of the cheese powder on vigorous swirling. Add 10 ml of concentrated nitric acid and boil the contents of the flask gently until the curd is digested. This operation takes from 7 minutes to 10 minutes. The finishing of the stage may be detected when the silver chloride is granular, the liquid is of a clear lemon yellow colour and the fat layer is free from solid material.

B-2.2 Add 2 ml of the iron alum solution and acid about 50 ml of distilled water.

B-2.3 Determine the excess silver nitrate by titration with the 0.05 N potassium thiocyanate solution until the first appearance of an orange tint persists for 15 seconds. Determine in the same manner the equivalent of 25 ml of silver nitrate solution as thiocyanate, using the same volumes of reagent and water.

B-3 CALCULATION

The salt content of the cheese powder is calculated by using the following formula:

$$\text{Salt, percent by mass} = \frac{0.292\ (V_1 - V_2)}{M}$$

where

V_1 = volume in ml of standard potassium thiocyanate equivalent to 25 ml of silver nitrate;

V_2 = volume in ml of thiocyanate used in the titration of excess silver nitrate; and

M = mass in g, of cheese powder taken for the test.

ANNEX C

(*Table* 2)

SAMPLING PLAN FOR MICROBIOLOGICAL REQUIREMENTS

C-1 SAMPLING PLAN FOR MICROBIOLOGICAL REQUIREMENTS

The terms *n*, *c*, *m* and *M* used in this standard have the following meaning:

n = Number of units comprising a sample;

c = Maximum allowable number of units having microbiological counts above *m* for 2-class sampling plan and between *m* and *M* for 3-class sampling plan;

m = Microbiological limit that separates unsatisfactory from satisfactory in a 2-class sampling plan or acceptable from satisfactory in a 3-class sampling plan; and

M = Microbiological limit that separates unsatisfactory from satisfactory in a 3-class sampling plan.

C-2 INTERPRETATION OF RESULTS

2-Class Sampling Plan (where n, c and m are specified)	*3-Class Sampling Plan (where n, c, m and M are specified)*
1. Satisfactory, if all the values observed are $\leq m$	1. Satisfactory, if all the values observed are $\leq m$
2. Unsatisfactory, if one or more of the values observed are > *m* or more than *c* values are > *m*	2. Acceptable, if a maximum of *c* values are between *m* and *M* and the rest of the values are observed as $\leq m$
	3. Unsatisfactory, if one or more of the values observed are > *M* or more than *c* values are > *m*

ANNEX D

(*Foreword*)

COMMITTEE COMPOSITION

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